

Proceedings of the

# 12th IAPR International Conference on Pattern Recognition

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Jerusalem, Israel

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**Conference A:**  
**Computer Vision & Image Processing**

*Sponsored by*

The International Association for Pattern Recognition (IAPR)

*In cooperation with*

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## A Message from the Organizers of the ICPR

We are pleased to welcome you to the 12th International Conference on Pattern Recognition, held this year at the Renaissance Hotel in the city of Jerusalem, Israel, October 9-13, 1994.

The conference program contains 215 podium presentations and 234 posters, organized into four tracks:

COMPUTER-VISION AND IMAGE PROCESSING  
PATTERN RECOGNITION AND NEURAL NETWORKS  
SIGNAL PROCESSING  
PARALLEL COMPUTING

The program committees, chairmen, and reviewers spent many hours towards achieving a high-quality and balanced technical program. Their efforts combined with the inspiring location in Jerusalem makes us certain that the 12th ICPR will be a rewarding and memorable experience.

Shmuel Peleg  
*General Co-Chair*  
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## A Message from the President of the IAPR

Welcome to the 12th International Conference on Pattern Recognition. It is a pleasure for me to greet the many participants from around the world who have gathered in Jerusalem to share their scientific knowledge, renew old friendships and meet new colleagues.

It seems appropriate at this time to look back over the years at the history of our organization. IAPR had its beginnings at the time of the First International Conference on Pattern Recognition in February 1972 in Washington, D.C. (USA). The goal of creating the association was complete with the first meeting of the IAPR Governing Board in November 1978 (ICPR 4). At that time, the original membership consisted of professional societies from 13 nations, as well as four individual memberships. Over the years we have grown to an association of professional societies from 32 countries. Our first Governing Board had 19 representatives; the current Board, with the addition of our newest members, has 46. Since the last ICPR we have added Belarus, Hong Kong, Slovenia, Taiwan, Ukraine, and most recently, South Africa, to IAPR membership. I am delighted to welcome our new members to participate in ICPR and IAPR.

As IAPR President, I am very gratified that one of my duties during this conference is to announce the first group of IAPR Fellows. The IAPR Fellow Committee has worked diligently over the past two years to establish this program to honor the individuals who have contributed to IAPR and to the field of pattern recognition, and it is exciting for me to share in the fruition of their efforts.

Another accomplishment during the past several years of which I am very proud is the establishment of an Industrial Affiliates Program, which is designed to allow industries in member countries to formally participate in IAPR. We hope this program will lead to increased collaboration and dissemination of pattern recognition research between industry and academic researchers. Several other programs, including the creation of new technical committees, will be introduced soon. These are designed to foster goodwill and encourage dissemination of information and cross-fertilization of ideas; the primary objectives of IAPR.

On this occasion, I would like to express my appreciation to Professor S. Ullman and Professor S. Peleg, General Co-Chairs of ICPR 12, as well as to Prof. Y. Yeshurun, Local Arrangements Chair, and Dr. M. Ejiri, Industrial & Applications Liaison, and the four Program Chairmen, Professors T. Huang, N. Tishby, D. Malah and S. Tanimoto, and the members of the program committees. The tasks involved in organizing and producing ICPR are daunting, and these individuals and their staffs and associates deserve our praise and gratitude for their achievement in putting together the exciting program that has been prepared for us.

Finally, I would like to thank the members of the Executive Committee, the Governing Board, the committee chairmen, and the many committee members who have served with me over the past two years. I believe this period has been extremely productive for IAPR. Several things of which we are most proud, in addition to the programs mentioned above, are the improved content and distribution of our IAPR Newsletter and the establishment of a closer working relationship with the Governing Board members. I greatly appreciate your cooperation, hard work, and enthusiasm over the past two years.

J. K. Aggarwal  
*The University of Texas at Austin*  
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*Chair: T.S. Huang (USA)*

##### Panel Members:

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R. Chellappa, University of Maryland  
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W.A. Pearlman, RPI  
R. Picard, MIT  
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